

### **REMARKS**

Applicants' attorney is appreciative of the interview granted by the Examiner on May 5, 2010. At the interview, a new claim 28 was discussed, and a photograph of a sonotrode in accordance with new claim 28 was presented to the Examiner. In addition, videos were demonstrated showing a re-creation of the motion of the claimed sonotrode under vibration in comparison with prior art sonotrodes, including those of Elmore et al.

Claims 14-15, 17-20, 22-23 and 27 have been rejected under 35 USC 102(b) as anticipated by Elmore et al, and Claims 24-26 have been rejected under 35 USC 103(a) as obvious over Elmore et al.

Claim 14 has now been replaced by new Claim 28, substantially as discussed at the interview. Claim 28 is directed specifically to the sonotrode shown in Figures 2-5 of the present application, in which the head portion is of rectangular cross-section in a direction perpendicular to the longitudinal axis and comprises at least one planar working surface for welding metal which is substantially parallel to the longitudinal axis, a front surface which is substantially perpendicular to the at least one working surface and a back surface. The head is thus cuboid in shape, which can be seen clearly in the front view of Figure 3, along with planar working surfaces 28 and 30. Descriptions of this embodiment can be found in paragraphs [0024] and [0027] of the application as published.

Claim 28 also recites an intermediate portion which joins the back surface to the body portion, the intermediate portion being tapered.

As did Claim 14, Claim 28 recites that the front surface comprises at least one reinforcement for reducing deflection of the at least one working surface, the reinforcement

exhibiting triangular geometry or curved and protruding geometry in a section of the longitudinal axis, and being shaped symmetrically with respect to a symmetry plane in which the longitudinal axis runs.

A sonotrode head having cuboid geometry is known in the art, specifically from DE-C-3508122, cited in the present specification, and which corresponds to U.S. 4,646,957. However, the sonotrode head disclosed in the prior art did not include a reinforcement for reducing undesired deflections of the working surface.

The Elmore et al reference discloses a vibratory device in which the resonant tip 26 is in the shape of a disk. While a protrusion of the front surface of this disc can be seen in Figure 3, this protrusion does not serve as a reinforcement. Thus, the oscillatory behavior of this disk is shown in Figure 7a of Elmore et al, disclosing a very substantial deflection of the disk. This deflection occurs because the resonant tip 26 comprises a circular disk which is acoustically driven at its center, as disclosed at column 6, lines 65-66. The resonant disk must remain elastic in order to vibrate in a desired manner, as disclosed at column 7, line 64-65. Further, it is stated at column 7, line 73 through column 8, line 2:

Figure 7a illustrates the approximate vibratory motion of the tip of the present invention when it vibrates according to the mode of vibration providing one nodal diameter. Vibratory loop and nodal areas are clearly shown.

The sonotrode of the invention does not have a sonotrode head that oscillates according to Elmore et al. There is no elasticity to this extent, and the claimed sonotrode head does not have such loop and nodal areas.

According to Elmore et al, in the case where the

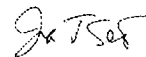
sonotrode is moved toward the converter, then according to Figure 7, the working surface oscillates in an opposite direction. In contrast to this, the working surface of the sonotrode of the invention moves in the same direction as the sonotrode body.

Applicants further point out that it would not have been obvious to use the arrangement of Figure 3 of Elmore et al, together with the claimed cuboid sonotrode head, both because the shape of the claimed head is different from that of Elmore et al, and because there is no evidence that the protruding front surface of Figure 3 of Elmore et al serves as a reinforcement. Thus, Applicants submit that it is indeed surprising and unexpected that the protrusion of the claimed invention reinforces the head and prevents unwanted deflections.

Having clearly established the difference in structure between the claimed sonotrode head and that of Elmore et al, withdrawal of these rejections is requested.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,



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